

10/535617

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number  
WO 2004/052253 A1

(51) International Patent Classification<sup>7</sup>: A61F 9/01  
(21) International Application Number: PCT/IT2003/000747  
(22) International Filing Date: 18 November 2003 (18.11.2003)  
(25) Filing Language: English  
(26) Publication Language: English  
(30) Priority Data: TO2002A001007  
19 November 2002 (19.11.2002) IT  
(71) Applicant and  
(72) Inventor: BARTOLI, Franco [IT/TT]; Via San Quintino,  
4bis, I-10121 Torino (IT).

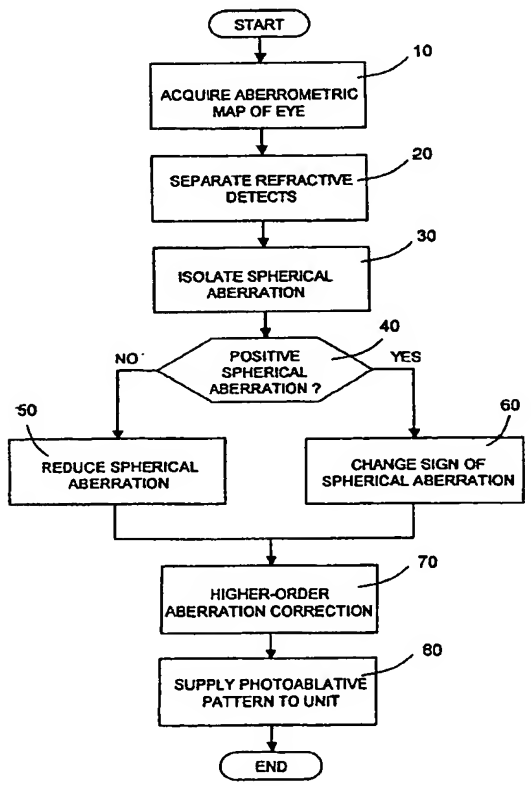
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.  
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(74) Agents: JORIO, Paolo et al.; C/O Studio Torta S.R.L., Via Viotti, 9, I-10121 Torino (IT).

Published:  
— with international search report

[Continued on next page]

(54) Title: EXCIMER LASER UNIT AND RELATIVE CONTROL METHOD FOR PERFORMING CORNEA ABLATION TO REDUCE PRESBYOPIA



(57) Abstract: There are described an excimer laser unit (1) and a method of controlling the unit to perform cornea ablation to reduce presbyopia, wherein the excimer laser unit (1) is controlled to form on the cornea a photoablative pattern inducing a fourth-order ocular aberration, in particular a positive spherical aberration. More specifically, an aberrometric map of the eye is first acquired indicating the visual defects of the eye, which include second-order visual defects such as hypermetropia, astigmatism, and myopia, and higher-order visual defects such as spherical aberration; if the detected spherical aberration is negative, it is reduced by numerically increasing its absolute value to obtain an overcorrect photoablative inducing positive spherical aberration; conversely, if the detected spherical aberration is positive, its sign is changed and its absolute value increased numerically to obtain an overcorrect photoablative pattern inducing positive spherical aberration; and the photoablative pattern so generated is supplied to the excimer laser unit (1) implementation on the cornea.

WO 2004/052253 A1

**WO 2004/052253 A1**



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*